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# 1990 Weed Control in Small Grains, Pastures, and Forages

Good weed control is necessary for maximum production of high-quality small grains, pastures, and forages in Illinois. When properly established, these crops can usually compete effectively with weeds so that the need for herbicide applications is minimized. Weeds, however, can sometimes become significant problems and warrant control. For example, wild garlic is considered the worst weed problem in wheat in southern Illinois. Because its life cycle is similar to that of winter wheat, wild garlic can establish itself with the wheat, grow to maturity, and produce large quantities of bulblets by wheat-harvest time. Economic considerations make it necessary to attempt some control of wild garlic in winter wheat.

In pastures, woody and herbaceous perennials can become troublesome. Annual grasses and broadleaf weeds such as chickweed and henbit may cause problems in hay crops. Through proper management, many of these weed problems can be controlled effectively.

Several herbicide labels carry the following groundwater warnings under either the environmental hazard or the groundwater advisory section. "X is a chemical that can travel (seep or leach) through soil and enter groundwater which may be used as drinking water. X has been found in groundwater as a result of its use as a herbicide. Users of this product are advised not to apply X where the soils are very permeable (that is, well-drained soils such as loamy sands) and the water table is close to the surface." See Table 1 for a list of herbicides that carry this warning.

## Small grains

Good weed control is critical for maximum production of high-quality small grains. Often, weed problems

can be dealt with before the crop is established. For example, many broadleaf weeds are controlled effectively in the late fall after corn or soybean harvest with **2,4-D**, **Banvel** (dicamba), or **Roundup** (glyphosate).

Tillage helps control weeds. Although generally limited to preplant and postharvest operations, tillage can destroy many annual weeds and help suppress certain perennials. Good cultural practices such as proper seeding rate, optimum soil fertility, and timely planting help to ensure the establishment of an excellent stand and a crop that is better able to compete with weeds.

Winter annual grasses such as downy brome and cheat are very competitive in winter wheat. Illinois wheat producers are often limited to preplant tillage operations for control of these species as few herbicides have label clearances for annual grass control in winter wheat. If a severe infestation of downy brome or cheat exists, planting an alternative crop or spring crop may be best for that field.

A decision to use postemergence herbicides for broadleaf weed control in small grains should be based on several considerations:

1. *Nature of the weed problem.* Identify the species present and consider the severity of the infestation. Also note the size of the weeds. Weeds are usually best controlled while small.
2. *Stage of the crop.* Most herbicides are applied after full tiller until the boot stage. Do not apply herbicides from the boot stage to the hard-dough stage of most small grains. (See Figure 1 for a description of growth stages of small grains.)
3. *Presence of a legume underseeding.* Usually 2,4-D ester formulations and certain other herbicides listed

**Table 1. List of Herbicides, Formulations, and Special Statements**

Trade name	Common name	Formulation	Restricted use	Ground water advisory
Balan 1.5E	benefin	1.5lb/gal	no	no
Banvel	dicamba	4 lb/gal	no	no
Buctril	bromoxynil	2 lb/gal	yes	no
Butyrac 200	2,4-DB	2 lb/gal	no	no
Butyrac Ester	2,4-DB	2 lb/gal	no	no
Crossbow	2,4-D + triclopyr	2 + 1 lb/gal	no	no
Eptam 7E	EPTC	7 lb/gal	no	no
Eptam 10G	EPTC	10%	no	no
Genep 7E	EPTC	7 lb/gal	no	no
Gramoxone Extra	paraquat	2.5 lb/gal	yes	no
Gramoxone Super	paraquat	1.5 lb/gal	yes	no
Harmony Extra 75DF	DPX-R9674	75%	no	no
Kerb 50W	pronamide	50%	?	no
Lexone 4L	metribuzin	4 lb/gal	no	yes
Lexone DF	metribuzin	75%	no	yes
MCPA	MCPA	several	no	no
Option	fenoxaprop	1 lb/gal	no	no
Poast	sethoxydim	1.5 lb/gal	no	no
Prowl	pendimethalin	4 lb/gal	no	no
Roundup	glyphosate	3 lb ae/gal	no	no
Sencor 4L	metribuzin	4 lb/gal	no	yes
Sencor DF	metribuzin	75%	no	yes
Sinbar	terbacil	80%	no	no
Spike 20P	tebuthiuron	20%	no	no
Spike 40P	tebuthiuron	40%	no	no
Treflan	trifluralin	4 lb/gal	no	no
Velpar L	hexazinone	2 lb/gal	no	no
2,4-D amine	2,4-D	several	no	no
2,4-D ester	2,4-D	several	no	no

**Table 2. Effectiveness of Herbicides on Weeds in Small Grains**

This table compares the relative effectiveness of herbicides on individual weeds. Ratings are based on labelled application rate and weed size or growth stage. Performance may vary due to weather and soil conditions, or other variables. Weed control rating: 10 = 95 to 100%, 9 = 85 to 95%, 8 = 75 to 85%, 7 = 65 to 75%, 6 = 55 to 65%, 5 = 45 to 55%, and 0 = less than 45% control.

Weed	Susceptibility to herbicide				
	2,4-D	MCPA	Banvel	Buctril	Harmony Extra
<b>Winter annual</b>					
Buckwheat, wild	5	8	10	9	8
Chickweed, common	5	5	6	6	9
Henbit	5	5	6	8	9
Horseweed (marestail)	8	8	10	6	7
Lettuce, prickly	10	9	8	6	8
Mustard spp., annual	10	10	6	9	9
Pennycress, field	10	10	6	8	9
Shepherdspurse	10	10	8	8	9
<b>Summer Annual</b>					
Lambsquarters, common	10	10	10	10	8
Pigweed spp.	10	10	10	7+	9
Ragweed, common	10	9	10	9	0
Ragweed, giant	10	9	10	8	0
Smartweed, Pennsylvania	6	7	9	9	9
<b>Perennial</b>					
Dandelion	9	8	8	0	6
Garlic, wild					
aerial bulblets	6 <sup>a</sup>	5	5	0	9
underground bulbs	0	0	0	0	5

<sup>a</sup> 2,4-D ester at maximum use rate.



Table 3. Weed Control in Small Grains

Herbicide	Broadcast rate/acre	Remarks	Restrictions
<b>Oats and wheat</b>			
2,4-D, 3.8 lb a.i. (amine)	½ to 1½ pt	Winter wheat more tolerant than oats. Apply in spring after full tiller but before boot stage. Do not treat in fall. Use lower rate of amine if underseeded with legume. Some legume damage may occur. May be used as pre-harvest treatment at 1 to 2 pints per acre during hard-dough stage.	Do not forage or graze within 2 weeks after treatment. Do not feed treated straw to livestock following a preharvest treatment.
MCPA (amine)	¼ to 3 pt	Less likely than 2,4-D to damage oats and legume underseeding. Apply from 3-leaf stage to boot stage. Rate varies with crop and weed size and presence of legume underseeding.	Do not graze dairy animals on treated areas for 7 days after treatment.
Banvel, 4 lb a.i.	4 fl oz	Do not apply to small grains with legume underseeding. In fall-seeded wheat, apply before jointing stage. In spring-seeded oats, apply before oats exceed 5-leaf stage.	Do not graze or harvest for dairy feed before ensilage (milk) stage.
Buctril 2E	1 to 2 pt	Apply Buctril alone to fall-seeded small grains in the fall or spring, but before the boot stage. Weeds are best controlled before the 3- to 4-leaf stage. Buctril may be applied at 1 to 1½ pints per acre to small grains underseeded with alfalfa.	Do not graze treated fields for 30 days after application.
<b>Wheat only</b>			
2,4-D, 3.8 lb a.i. (ester)	½ to ¾ pt	Do not apply to wheat with legume underseeding. Apply in spring after full tiller but before boot stage. For pre-harvest treatment, apply 1 to 2 pints per acre during hard-dough stage. For control of wild garlic or wild onion, apply 1 to 2 pints in the spring when wheat is 4 to 8 inches high, after tillering but before jointing; these rates may injure the crop.	Do not forage or graze within 2 weeks after treatment. See current label for additional restrictions.
Harmony Extra 75DF	0.3 to 0.6 oz	Apply to the crop after the 2-leaf stage, but before the third node is detectable. Wild garlic should be less than 12 inches tall, with 2 to 4 inches of new growth. Annual broadleaf weeds should be past the cotyledon stage, actively growing, and less than 4 inches tall or across. Nonionic surfactant at 0.25% v/v should be included in the spray mixture. When liquid fertilizer is used as the carrier, use ¼-½% v/v surfactant. Temporary stunting and yellowing may occur when Harmony Extra is applied using liquid fertilizer solution as the carrier. These symptoms will be intensified with the addition of surfactant. Without surfactant addition, wild garlic control may be erratic.	Do not plant to any crop other than wheat or barley within 30 days after application. Do not apply to cereals underseeded with legumes.

in Table 3 should not be applied because they may damage the legume underseeding.

4. *Herbicide activity.* Determine crop tolerance and weed susceptibility to herbicides by referring to Tables 2 and 3. The lower rates in Table 3 are for more easily controlled weeds and the higher rates for the more difficult to control species. Tank-mixes may broaden the weed spectrum and thereby improve control; check the herbicide label for registered combinations.
5. *Economic justification.* Consider the cost of the treatment in terms of potential benefits such as the value of increased yield, improved quality of grain, and ease of harvesting the crop.

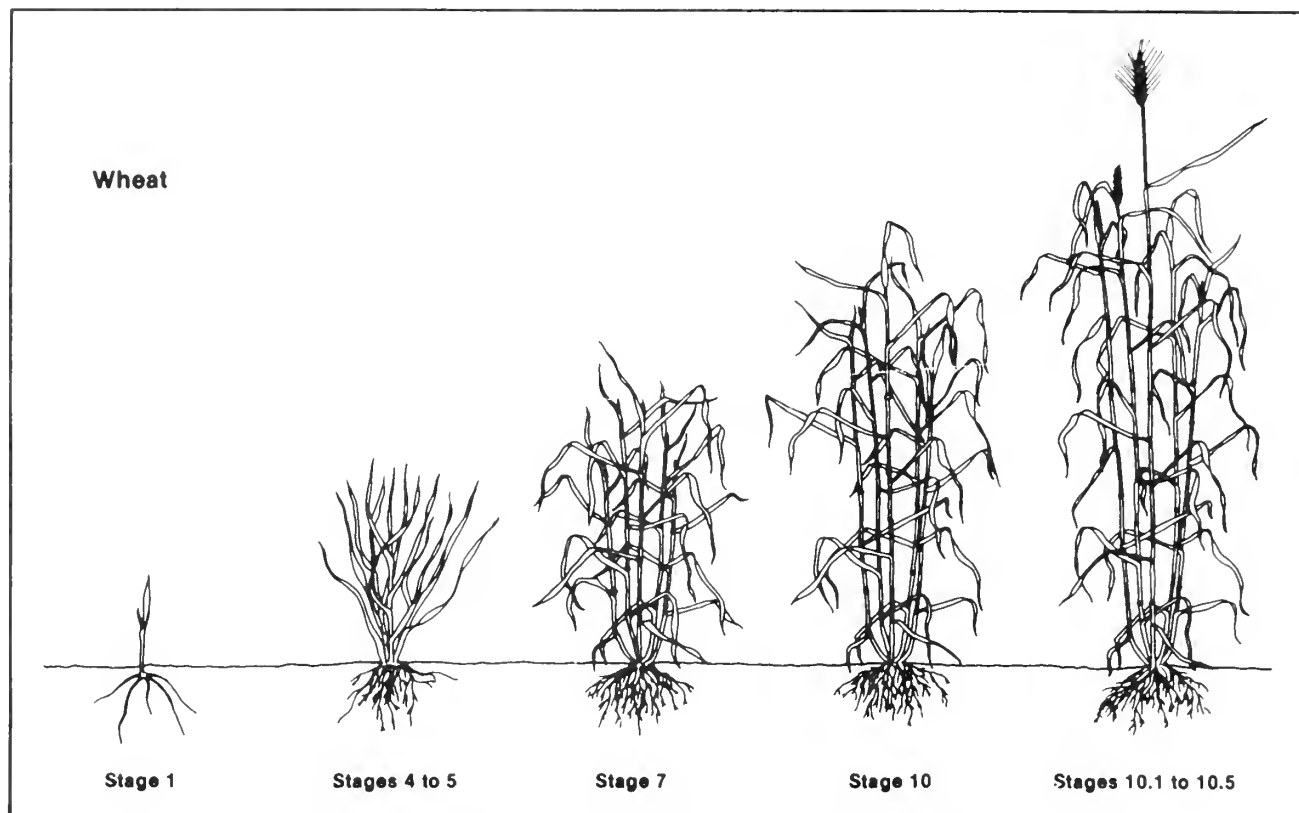
Table 3 outlines current suggestions for weed control options in wheat and oats, the two small grains most commonly grown in Illinois. Always consult the herbicide label for specific information about the use of a given product.

For annual broadleaf weeds postemergence herbicides such as **2,4-D**, **MCPA**, **Banvel**, and **Buctril** (bromoxynil) can provide good control of susceptible

species (Table 2). Herbicides must be applied during certain growth stages of the crop to avoid crop injury and for optimum weed control. Refer to Figure 1 for a description of the growth stages of small grains.

Some perennial broadleaf weeds may not be controlled satisfactorily with the low herbicide rates used in small grains; and higher rates are not advisable because they can cause serious injury to crops. To control perennial weeds, translocated herbicides such as **2,4-D**, **Banvel**, or **Roundup**, in combination with tillage after small grain harvest or after soybean harvest but before establishing small grains, may be the best approach.

Wild garlic continues to be a serious weed problem in winter wheat. **Harmony Extra** (DPX-R9674), applied in the spring at 0.3 to 0.6 ounce of 75 DF per acre, effectively controls wild garlic aerial bulblets and some underground bulbs as well. **Harmony Extra** also helps control chickweed, henbit, common lambsquarters, smartweed, and several species of mustard. See Tables 2 and 3 for additional information on controlling weeds in small grains.



**Figure 1. Growth stages of small grains.**

#### **Seedling**

**Stage 1.** The coleoptile, a protective sheath that surrounds the shoot, emerges. The first leaf emerges through the coleoptile, and other leaves follow in succession from within the sheath of the previously emerging leaf.

#### **Tillering**

**Stages 2 to 3.** Tillers (shoots) emerge on opposite sides of the plant from buds in the axils of the first and second leaves. The next tillers may arise from the first shoot at a point above the first and second tillers or from the tillers themselves. This process is repeated until a plant has several shoots.

**Stages 4 to 5.** Leaf sheaths lengthen, giving the appearance of a stem. The true stems in both the main shoot and in the tillers are short and concealed within the leaf sheaths.

#### **Jointing**

**Stage 6.** The stems and leaf sheaths begin to elongate rapidly, and the first node (joint) of the stem is visible at the base of the shoot.

**Stage 7.** Second node (joint) of stem is visible. The next-to-last leaf is emerging from within the sheath of the previous leaf but is barely visible.

**Stage 8.** Last leaf, the "flag leaf," is visible but still rolled.

**Stage 9: Preboot stage.** Ligule of flag leaf is visible. The head begins to enlarge within the sheath.

**Stage 10: Boot stage.** Sheath of flag leaf is completely emerged and distended because of enlarging but not yet visible head.

#### **Heading**

**Stages 10.1 to 10.5.** Heads of the main stem usually emerge first, followed in turn by heads of tillers in order of their development. Heading continues until all heads are out of their sheaths. The uppermost internode continues to lengthen until the head is raised several inches above the uppermost leaf sheath.

#### **Flowering**

**Stages 10.5.1 to 10.5.3.** Flowering progresses in order of head emergence. Unpollinated flowers result in barren kernels.

**Stage 10.5.4: Premilk stage.** Flowering is complete. The inner fluid is abundant and clear in the developing kernels of the flowers pollinated first.

#### **Ripening**

**Stage 11.1: Milk stage.** Kernel fluid is milky white because of accumulating starch.

**Stage 11.2: Dough stage.** Kernel contents are soft and dry (doughy) as starch accumulation continues. The plant leaves and stems are yellow.

**Stage 11.3.** The kernel is hard, difficult to divide with the thumbnail.

**Stage 11.4.** Ripe for cutting. Kernel will fragment when crushed. The plant is dry and brittle.



## Grass pastures

Unless properly managed, broadleaf weeds can become a serious problem in grass pastures. They can compete directly with forage grasses and reduce the nutritional value and longevity of the pasture. Certain species, such as white snakeroot and poison hemlock, are also poisonous to livestock and may require special consideration.

Perennial weeds are probably of greatest concern. They can exist for many years, reproducing from both seed and underground parent rootstocks. Occasional mowing or grazing helps control certain annual weeds, but perennials can grow back from underground root reserves unless long-term control strategies are implemented.

Certain biennials can also flourish in grass pastures. The first year, they exist as a prostrate rosette, so that even close mowing does little to control their growth. The second year, biennials produce a seedstalk and a deep taproot. If these weeds are grazed or mowed at this stage, root reserves can sometimes enable the plant to grow again, thereby increasing its chance of surviving to maturity.

In general, the use of good cultural practices such as maintaining optimum soil fertility, rotational grazing, and periodic mowing can help keep grass pastures in good condition and more competitive with weeds.

Where broadleaf weeds become troublesome, however, **2,4-D** or **Banvel** may be used. **Roundup** may also be used as a spot treatment, and **Crossbow** (2,4-D plus triclopyr) is labeled for control of broadleaf and woody plant species in permanent grass pastures. Certain formulations of **Spike** (tebuthiuron) may also be used in grass pastures for brush and woody plant control. (See Tables 4 and 5 for additional information.)

Proper identification of target weed species is important. As shown in Table 4, weeds vary in their susceptibility to herbicides. Timing of herbicide application may also affect the degree of weed control. Annuals and biennials are most easily controlled while young and relatively small. A fall or early spring treatment works best if biennials or winter annuals are the main weed problem. Summer annuals are most easily controlled in the spring or early summer. Apply translocated herbicides to control established perennials when the weeds are in the bud to bloom stage. Perennials are most susceptible at this reproductive phase because translocated herbicides can move downward with food reserves to the roots, potentially killing the entire plant.

For control of woody brush, apply **2,4-D**, **Banvel**, or **Crossbow** when the plants are fully leafed and actively growing. Where regrowth occurs, a second treatment may be needed in the fall. During the dormant season, oil-soluble formulations of **2,4-D**,

**Table 4. Effectiveness of Herbicides on Weeds in Grass Pastures**

This table compares the relative effectiveness of herbicides on individual weeds. Ratings are based on labelled application rate and weed size or growth stage. Performance may vary due to weather and soil conditions, or other variables. Weed control rating: 10 = 95 to 100%, 9 = 85 to 95%, 8 = 75 to 85%, 7 = 65 to 75%, 6 = 55 to 65%, 5 = 45 to 55%, and 0 = less than 45% control.

Weed	Susceptibility to herbicide			
	2,4-D	Banvel	Crossbow	Roundup <sup>a</sup>
<b>Winter Annual</b>				
Horseweed (maretail)	9	10	10	10
Pennycress, field	10	8	9	10
<b>Summer annual</b>				
Ragweed, common	10	10	10	10
Ragweed, giant	10	10	10	10
<b>Biennial</b>				
Burdock, common	10	10	10	9
Hemlock, poison	9	10	10	9
Thistle, bull	10	10	10	10
Thistle, musk	10	9	9	10
<b>Perennial<sup>b</sup></b>				
Daisy, oxeye	8	10	10	9
Dandelion	10	8	10	8
Dock, curly	7	10	10	9
Goldenrod spp.	8	9	8	10
Hemlock, spotted water	9	10	10	9
Ironweed	8	10	9	10
Milkweed, common	6	8	8	8
Nettle, stinging	9	9	9	9
Plantain spp.	10	8	10	9
Rose, multiflora <sup>c</sup>	8	9	10	9
Snakeroot, white	8	9	9	8
Sorrel, red	5	10	10	8
Sowthistle, perennial	8	9	10	9
Thistle, Canada	8	9	9	8

<sup>a</sup> Spot treatment.

<sup>b</sup> Perennial weeds may require more than one application.

<sup>c</sup> Spike is also an effective herbicide for multiflora rose control (weed susceptibility = 10).

**Table 5. Broadleaf Weed Control in Grass Pastures**

Herbicide	Rate/acre	Remarks	Restrictions
2,4-D, 3.8 lb a.i. (amine or low-volatile ester)	2 to 4 pt	Broadleaf weeds should be actively growing. Higher rates may be needed for less susceptible weeds and some perennials. Spray bull or musk thistles in the rosette stage (spring or fall) while they are actively growing. Spray perennials such as Canada thistle in the bud stage. Spray susceptible woody species in spring when leaves are fully expanded.	Do not graze dairy animals within 7 days after treatment. Do not apply to newly seeded areas or to grass when it is in boot to milk stage. Be cautious of spray drift.
Banvel, 4 lb a.i.	Annuals: ½ to 1½ pt Biennials: ½ to 3 pt Perennials: 1 to 2 pt (suppression) Perennials: 1 to 6 qt (control) Woody brush: 1 to 2 pt (suppression) Woody brush: 1 to 8 qt (control)	Use lower rates for susceptible annuals when they are small and actively growing and for susceptible biennials in the early rosette stage. Use higher rates for larger weeds, for less susceptible weeds, for established perennials in dense stands, and for certain woody brush species.	Refer to label for specific timing restrictions for lactating dairy animals. Remove meat animals from treated areas 30 days before slaughter. Be cautious of spray drift.
Crossbow	Annuals: 1-2 qt Biennials and herbaceous perennials: 2 to 4 qt Woody perennials: 6 qt	Apply to foliage during warm weather when brush and broadleaf weeds are actively growing. When applying as a spot spray, thoroughly wet all foliage. See herbicide label for more specific rate recommendations.	Remove livestock from treated forage at least 3 days before slaughter during the year of treatment. Do not graze lactating dairy animals on treated areas for one year following treatment. Do not harvest grass for hay from treated areas for one year following treatment. Be cautious of spray drift.
Roundup	2% solution (spot treatment)	Controls a variety of herbaceous and woody brush species such as multiflora rose, brambles, poison ivy, quackgrass. Spray foliage of target vegetation completely and uniformly, but not to point of runoff. Avoid contact with desirable nontarget vegetation. Consult label for recommended timing of application for maximum effectiveness on target species.	No more than ¼ of any acre should be treated at one time. Further applications may be made in the same area at 30-day intervals. Allow 14 days after application before grazing or harvesting forage.
Spike 20P Spike 40P	10 to 20 lb 5 to 10 lb	For control of brush and woody plants in rangeland and grass pastures. Requires sufficient rainfall to move herbicide into root zone. May kill or injure desirable legumes and grasses where contact is made. Injury is minimized by applying when grasses are dormant.	Do not apply on or near field crops or other desirable vegetation. Do not apply where soil movement is likely. Grazing allowed in areas treated with 20 lb or less Spike 20P and 10 lb or less Spike 40P. At these rates, grass may be cut for hay 1 year after application. Refer to label for additional restrictions.

**Banvel** or **Crossbow** may be used in fuel oil. **Spike** controls many woody perennials and should be applied to the soil in the spring. **Spike** requires rainfall to move it into the root zone of target species.

The weed control options in grass pastures are shown in Table 5. Be cautious with any pesticide and always consult the herbicide label for specific information about the use of a given product.

### Forage legumes

Weed control is very important in managing forage legumes. Weeds can severely reduce the vigor of legume stands and thus reduce yield and forage quality. Good management begins with weed control practices that prevent weeds from becoming serious problems.

### Establishment

To minimize problems, prepare the seedbed properly so that it is firm and weed-free. Select an appropriate legume variety. If you use high-quality seed and follow the recommendations for liming and fertility, the legume crop may crowd out many weeds and reduce the need for herbicides.

In fields where companion crops such as oats are used to reduce weed competition, seed the small grain at half the rate for grain production to ensure that the legumes will become established with minimum stress. If the legume is seeded without a companion crop (direct seeded), the use of an appropriate herbicide is suggested.

**Preplant incorporated herbicides.** **Balan** (benefin) and **Eptam** or **Genep** (EPTC) are registered for preplant

**Table 6. Weed Control in Forages**

Herbicide	Legume	Time of application	Broadcast rate/acre	Remarks	Restrictions
<b>PURE LEGUME FORAGES</b>					
<b>Seedling year</b>					
Balan 1.5EC	Alfalfa, birdsfoot trefoil, red clover, ladino clover, alsike clover	Preplant incorporated	3 to 4 qt	Apply shortly before seeding. Do not use with any companion crop of small grains.	Do not use on soils high in organic matter.
Eptam 7E,10G or Genep 7E	Alfalfa, birdsfoot trefoil, lespedeza, clovers	Preplant incorporated	3½ to 4½ pt 30 lb (10G)	Apply shortly before seeding. Do not use with any companion crop of small grains.	Do not use on white Dutch clover.
Buctril 2E	Alfalfa only	Postemergence	1 to 1½ pt	Apply in the fall or spring to seedling alfalfa with at least 2 trifoliate leaves. Apply to weeds at or before the 4-leaf stage or 2 inches in height (whichever is first). May be tank-mixed with 2,4-DB for improved control of kochia and pigweed.	A restricted-use herbicide. Do not apply when temperatures are likely to exceed 70°F at application or for the 3 days following application or when the crop is stressed. Do not add a surfactant or crop oil. Do not harvest or graze spring-treated alfalfa within 30 days and fall-treated alfalfa within 60 days following treatment (60 days if tank-mixed with 2,4-DB).
Butyrac 200 or Butyrac Ester	Alfalfa, birdsfoot trefoil, ladino clover, red clover, alsike clover, white clover	Postemergence	1 to 3 qt (amine) 2 to 4 pt (ester)	Use amine or ester formulation when weeds are less than 3 inches tall or less than 3 inches across if rosettes. Use higher rates for seedling smartweed or curly dock.	Do not harvest or graze for 60 days following treatment. Do not use on sweet clover.
Kerb 50W	Alfalfa, birdsfoot trefoil, crown vetch, clovers	Postemergence	1 to 3 lb	In fall-seeded legumes, apply after legumes have reached trifoliate stage. In spring-seeded legumes, apply next fall.	Do not graze or harvest for 120 days following application.
Poast 1.5E	Alfalfa only	Postemergence	¾ to 1½ pt	Alfalfa is tolerant of Poast at all stages of growth. Best grass control is achieved when applications are made prior to mowing. If tank-mixed with 2,4-DB, follow 2,4-DB harvest and grazing restrictions.	Do not apply Poast within 7 days of grazing, feeding, or harvesting undried forage, or within 20 days of harvesting dry hay. Do not apply more than a total of 5 pints of Poast per acre in one season. Apply by ground equipment only.
<b>Established stands</b>					
Butyrac 200	Alfalfa only	Growing	1 to 3 qt (amine)	Spray when weeds are less than 3 inches tall or less than 3 inches wide if rosettes. Fall treatment of fall-emerged weeds may be better than spring treatment.	Do not harvest or graze for 30 days following application. Do not apply to sweet clover.
Kerb 50W	Alfalfa, birdsfoot trefoil, crown vetch, clovers	Growing or dormant	1 to 3 lb	Apply in the fall after last cutting, when weather and soil temperatures are cool.	Do not harvest or graze for 120 days.

incorporation for legumes that are not seeded with grass or small-grain companion crops. These herbicides will control most annual grasses and some broadleaf weeds. In fall plantings, the weeds controlled include winter annuals such as downy brome and cheat. In spring legume plantings, the summer annual weeds controlled include foxtails, pigweeds, lambsquarters, crabgrass, and fall panicum.

**Eptam** or **Genep** can help suppress johnsongrass

and quackgrass seedlings, yellow nutsedge, and shattercane, in addition to controlling many annual grasses and some broadleaf weeds. Neither one will effectively control mustards, smartweed, or established perennials. **Balan**, **Eptam**, and **Genep** must be thoroughly incorporated soon after application to avoid herbicide loss. They should be applied shortly before the legume is seeded, so they remain effective as long as possible into the growing season.

**Table 6. Weed Control in Forages (continued)**

Herbicide	Legume	Time of application	Broadcast rate/acre	Remarks	Restrictions
Sencor or Lexone	Alfalfa and alfalfa-grass mixtures	Dormant	$\frac{3}{4}$ to 2 pt (4L) $\frac{1}{2}$ to $1\frac{1}{3}$ lb (75 DF)	Apply once in the fall or spring before new growth starts. Rate is based upon soil type and organic-matter content. Higher rates may injure grass component.	Do not use on sandy soils or soils with pH greater than 7.5. Do not graze or harvest for 28 days.
Sinbar 80W	Alfalfa only	Dormant	$\frac{1}{2}$ to $1\frac{1}{2}$ lb	Apply once in the fall or spring before new growth starts. Use lower rates for coarser soils.	Do not use on sandy soils with less than 1% organic matter. Do not plant any crop for 2 years.
Velpar L	Alfalfa only	Dormant	1 to 3 qt	Apply in the fall or spring before new growth exceeds 2 inches in height. Can also be applied to stubble after hay crop removal but before regrowth exceeds 2 inches.	Do not plant any crop except corn within 2 years of treatment. Corn may be planted 12 months after treatment, provided deep tillage is used. Do not graze or harvest for 30 days.
Poast 1.5E	Alfalfa only	Postemergence	$\frac{3}{4}$ to $1\frac{1}{2}$ pt	Alfalfa is tolerant of Poast at all stages of growth. Best grass control is achieved when applications are made prior to mowing. If tank-mixed with 2,4-DB, follow 2,4-DB grazing and harvest restrictions.	Do not apply Poast within 7 days of grazing, feeding, or harvesting undried forage, or within 20 days of harvesting dry hay. Do not apply more than a total of 5 pints of Poast per acre in one season. Apply by ground equipment only.
Gramoxone Extra	Alfalfa only	Dormant Between cutting	$1\frac{1}{2}$ to 2 pt 12.8 fl oz	For dormant season, apply after last fall cutting or before spring growth is 1 inch tall. Weeds should be succulent and growing at the time of application. Between cutting treatments should be applied immediately after hay removal within 5 days after cutting. Weeds germinating after treatment will not be controlled. Add surfactant as label indicates.	A restricted-use herbicide. Do not apply if fall regrowth following the last fall cutting is more than 6 inches tall. Do not cut, harvest, or graze for 60 days following a dormant season application and for 30 days between cutting applications.
Roundup	Alfalfa, clover, and alfalfa or clover-grass mixtures	Growing	2% solution (spot treatment)	Apply to actively growing, susceptible weeds. Avoid contact with desirable, nontarget vegetation because damage may occur. Refer to label for recommended timing of application for maximum effectiveness on target species.	No more than $\frac{1}{10}$ of any acre should be treated at one time. Further applications may be made in the same area at 30-day intervals. Do not graze or harvest for 14 days.

Weeds that emerge during crop establishment should be evaluated for their potential to become problems. If they do not reduce the nutritional value of the forage or if they can be controlled by mowing, they should not be the primary target of a postemergence herbicide. For example, winter annual weeds do not compete vigorously with the crop after the first spring cutting. Unless they are unusually dense or production of weed seed becomes a concern, these weeds may not be a significant problem. Some weeds such as dandelions are palatable and may not need to be controlled if the overall legume stand is dense and healthy; but undesirable weeds must be controlled early to prevent their establishment.

**Postemergence herbicides.** Poast (sethoxydim) may

be applied to seedling alfalfa for control of annual and some perennial grass weeds after weed emergence. Grasses are more easily controlled when small, and alfalfa is tolerant to **Poast** at all stages of growth. **Butyrac** (2,4-DB) controls many broadleaf weeds and may be applied postemergence in many seedling forage legumes. **Buctril** (bromoxynil) may also be used to control broadleaf weeds in seedling alfalfa. Be sure to apply Buctril while weeds are small. (See Table 7 for specific weed control ratings.)

#### Established legumes

The best weed control in established forage legumes is maintenance of a dense, healthy stand via proper management techniques. Chemical weed control in

**Table 7. Effectiveness of Herbicides on Weeds in Legume and Legume-Grass Forages**

This table compares the relative effectiveness of herbicides on individual weeds. Ratings are based on labelled application rate and weed size or growth stage. Performance may vary due to weather and soil conditions, or other variables. Weed control rating: 10 = 95 to 100%, 9 = 85 to 95%, 8 = 75 to 85%, 7 = 65 to 75%, 6 = 55 to 65%, 5 = 45 to 55%, and 0 = less than 45% control.

Weed	Balan	Buctril	Butyrac	Genep/ Eptam	Gramox- one	Kerb	Poast	Round- up <sup>a,b</sup>	Sencor/ Lexone <sup>a</sup>	Sinbar	Velpar
<b>Winter annual</b>											
Brome, downy	9	0	0	9	9	9	9	9	9	9	8
Chickweed, common	8	6	6	7	9	8	0	10	9	9	9
Henbit	5	8	6	9	9	8	0	8	9	9	8
Mustard, wild	0	8	10	6	9	5	0	9	9	9	9
Pennycress, field	0	9	9	6	9	5	0	10	9	9	9
Shepherdspurse	0	9	9	7	9	5	0	9	9	9	9
<b>Summer annual</b>											
Barnyardgrass	9	0	0	9	8	8	10	10	6	6	7
Crabgrass spp.	9	0	0	9	6	8	10	9	5	7	7
Foxtail spp.	9	0	0	9	9	8	10	10	6	7	7
Lambsquarters, common	9	10	8	9	9	6	0	9	9	9	9
Nightshade spp. <sup>c</sup>	0	9	8	8	9	6	0	9	5	6	6
Panicum, fall	9	0	0	9	9	6	10	10	6	6	6
Pigweed sp.	9	8	8	9	9	6	0	10	9	8	9
Ragweed, common	0	9	9	5	9	5	0	9	8	8	8
Smartweed, Pennsylvania	0	9	6	5	9	5	0	9	9	8	8
<b>Perennial</b>											
Dandelion	0	0	8	0	0	0	0	8	7	6	8
Dock, curly	0	0	5	0	0	0	0	9	6	6	6
Nutsedge, yellow	0	0	0	8	0	0	0	7	0	0	0
Orchardgrass	5	0	0	6	5	7	6	8	5	5	6
Quackgrass	5	0	0	8	5	8	7	9	5	5	5

<sup>a</sup> Lexone, Sencor, and Roundup are labelled for use in mixed legume-grass forages. No other herbicides are cleared for this use.

<sup>b</sup> Spot treatment.

<sup>c</sup> Control of different species may vary.

established forage legumes is often limited to late fall or early spring applications of herbicide. **Sencor** or **Lexone** (metribuzin), **Sinbar** (terbacil), and **Velpar** (hexazinone) are applied after the last cutting in the fall or in the early spring. These herbicides control many broadleaf weeds and some grasses, too. **Kerb** (pronamide) is used for grass control and is applied in the fall after the last cutting. **2,4-DB** controls many broadleaf weeds in established alfalfa; **2,4-DB** should be applied when the weeds are small and actively growing. Refer to Tables 6 and 7 for additional remarks and weed control suggestions.

Once grass weeds have emerged, they are particularly difficult to control in established alfalfa. **Poast** herbicide may be used in established alfalfa for control of annual and some perennial grasses. Optimum grass control is achieved if **Poast** is applied when grasses are small and before the weeds are mowed.

Table 6 outlines current suggestions for weed control options in legume forages. The degree of control will often vary with weed size, application rate, and environmental conditions. Be sure to select the correct herbicide for the specific weeds to be controlled (Table 7). Always consult the herbicide label for specific information about the use of a given product.

### Acreage Conservation Reserve Program

The Acreage Conservation Reserve Program (ACR) continues to occupy substantial farmland in Illinois.

Investing in good weed control on ACR land will help alleviate some problem weeds when rotating back to row crops. For example, perennial broadleaf weeds such as hemp dogbane and common milkweed may be controlled or suppressed under small-grain production or when a perennial grass or legume species is grown. In addition, mowing or alternative herbicide options may be available. Whether using tillage, mowing, herbicides, or combinations, the best approach is to remain flexible and utilize cost-effective methods that fit your weed problems and management system.

Clover, alfalfa, or other forage legumes may be one of the best options for ACR acres. The cover helps conserve soil, improves soil structure, and adds nitrogen. Clover and alfalfa can be very economical, particularly if grown for at least two consecutive years. The use of a herbicide for legume establishment can allow a vigorous legume stand and alleviate the need for weed control measures later. If annual broadleaf weeds become a problem, applying **2,4-DB** or mowing is another helpful option. Herbicides for use on forage legumes on ACR acres include those registered for commercial production fields and are listed in Table 6. In addition, **Treflan** (trifluralin) or **Prowl** (pendimethalin) may be used preplant incorporated to control annual grasses and some small-seeded broadleaf weeds. Some stand reduction may occur with **Treflan** or **Prowl**, but good weed control can compensate to allow for excellent establishment of the legume. **Fusilade** (fluazifop), **Option** (fenoxaprop), and **Poast** (sethoxydim) may be used for grass control postemergence on

forage legumes on ACR land. With many of these products, haying and grazing are not allowed, therefore be sure to follow all restrictions imposed by the pesticide label.

Oats are commonly grown as a cover crop on set-aside acres. Oat seed is inexpensive and easy to obtain. If the Agricultural Stabilization and Conservation Service (ASCS) does not require clipping before seed maturity, oats can reseed themselves for fall cover. Wheat, rye, and barley are other small-grain cover crop possibilities.

Sowing clean oat, wheat, rye, or barley seed is the first step to minimizing weed problems. Small grains generally provide relatively good cover until they mature or the area is mowed; then weeds can soon proliferate. However, winter wheat or rye may be sown in the spring, and without the overwintering period (vernalization), little or no seed production occurs and a dense cover remains. Annual broadleaf weeds can be controlled by mowing and by the use of the herbicides listed in Table 3. Tillage prior to small-grain planting will help control established weeds.

Planting a small-grain/legume combination is another option for set-aside. Utilizing the small grain as a nurse or companion crop may help reduce weed pressure and alleviate the need for herbicides. If weeds become a problem, refer to Table 6 for more information in selecting the appropriate herbicide. In addition to those herbicides listed in Table 6, **Buctril** may also be used to control broadleaf weeds in seedling alfalfa-grass mixes on Conservation Reserve Program acres. Refer to current label rates and restrictions.

Sorghum-sudan grass can make a rapid, vigorous cover that also effectively suppresses many weeds. Although herbicides are rarely needed in sorghum-sudan grass stands, mowing and tillage may be difficult; and viable seed sometimes causes weed problems the next year.

Acreage Conservation Reserve land offers a unique opportunity for controlling problem weeds such as perennials and keeping other more common weeds in check. By managing ACR land this year, controlling weeds in future row crops will be less difficult and more profitable.





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